

Application No. 10/648,029

Atty. Docket No. 009.2005

REMARKS

Claims 35-67 remain pending. Claims 38, 49, 58 and 66 have been amended. Applicants respectfully submit that in the Advisory Action the Examiner did not apply the proper standard in finding the previously filed 37 C.F.R. § 1.131 Declarations inadequate to disqualify *Lin* (U.S. Published Patent Application No. 2003/0122240). Properly applying the legal standard to the previously filed and entered Declarations and Exhibits, Applicants successfully show priority of invention prior to the priority date of *Lin*. Thus, the newly cited *Lin* reference is not prior art. Furthermore, *Lin* in conjunction with *Bhakta* (U.S. Patent No. 6,222,739) does not render the present claims obvious. Also, *Bhakta* does not teach a carrier body with a recess or a carrier with planar faces with a recess. Accordingly, Applicants respectfully request reconsideration of the present application.

***Lin* is not prior art**

The Declarations under 37 C.F.R. § 1.131 and Exhibits A and B to Reply under 37 C.F.R. § 1.116, filed 16 February 2006, show possession of a device falling with the claims of the present application prior to the priority date of *Lin*, 19 May 2000. These facts show both constructive and actual reduction to practice.

To swear behind a prior art reference, a "declaration must establish possession of either the whole invention claimed or something falling within the claim." MPEP § 715.02. Constructive reduction to practice may be used to show prior invention, showing facts of "conception of the invention prior to the effective date of the reference" and reasonable diligence from prior to the reference date to the filing date of the application. MPEP § 715.07. Priority of invention may be shown by evidence of fact, such as sketches, and each fact should be specifically referred to in the declaration. See MPEP § 715.07. Furthermore, the facts "need not support all claimed limitations, provided that any missing limitation is supported by the declaration itself." MPEP 715.07, quoting *Ex parte Ovshinsky*, 10 USPQ2d 1075 (Bd. Pat. App. & Inter. 1989). Moreover, there is no requirement in the MPEP or case law that the declaration must establish a nexus or a direct link between the Exhibits and the claims. Finally, the Examiner is required to accept all the facts alleged in the declaration at face value. *Herman v. William Brooks Shoe Co.* 39 USPQ 2d 1773, 1777 (S.D. N.Y. 1996).

Application No. 10/648,029

Atty. Docket No. 009.2005

Kenneth Kledzik attests, as recorded by his Declaration, that prior to 19 May 2000, he conceived of a carrier with each of the features of claim 35. Specifically, he declares that he conceived of a carrier with a ball grid array for connection with a circuit board, mounting pad locations located on the top and bottom of the carrier with mounting pad arrays coupled to a carrier interface, a recess in the carrier, two IC packages, including a package body with an integrated circuit chip and a ball grid array coupled with the carrier on the mounting pad arrays, and an interconnection array conductively coupling IC package mounting pad locations with a circuit board.

The Exhibits attached to the Reply under 37 C.F.R. § 1.116 support Mr. Kledzik's Declaration. Exhibit A shows 2 pages of notes prepared by Michael Chabot while implementing certain manufacturing processes for making certain carrier designs and assemblies for Kenneth Kledzik that are the subject of the present patent application. This document was prepared prior to 19 May 2000. Exhibit B shows these same 2 pages with specific drawings circled for the Examiner's convenience.

The circled portion on page 1 of Exhibit B shows a carrier with a ball grid array, two IC packages with ball-grid arrays attached to the top and the bottom of the carrier, and a ball-grid array on the carrier for connecting to a circuit board. Mr. Kledzik's Declaration positively identifies each of these facts shown and relied upon in the Exhibits. Even though Exhibit B does not specifically show all the claim limitations of claim 35, the missing limitations are sufficiently supported by the Declaration of Mr. Kledzik as required by *Ovshinsky*.

As further support for Mr. Kledzik's Declaration, Michael Chabot declares that the drawing he made of the carrier conceived of by Mr. Kledzik, prior to 19 May 2000, included all the features of claim 35. He states that the drawing shows an IC package connected to the top of the carrier and another beneath the carrier. He recalls that the recess in the carrier in this drawing was designed for an IC package to fit on a circuit board beneath the carrier and that the carrier included a mounting pad array coupled with a carrier interface and the carrier's ball grid array was also coupled with the carrier interface.

In the Advisory Action, the Examiner states that the Declarations do not positively identify the various drawn features shown in the accompanying Exhibits, but merely set forth what the inventors recall the various drawn features to be, and not what these features actually

Application No. 10/648,029

Atty. Docket No. 009.2005

depict. However, points 8 and 9 of Mr. Kledzik's Declaration positively identify the various features shown and relied upon in the Exhibits. Point 8 identifies a carrier with a ball grid array and two IC packages attached to the top and the bottom of the carrier. Point 9 identifies a mounting pad array, a ball grid array, and a recess within the carrier. The drawing also shows an IC package connected to the top of the carrier and another beneath the carrier.

The Examiner also disapproves of the declaration because it cites what the declarants recall and not what the features actually depict. There is no requirement, however, in the MPEP, C.F.R. or case law that recollections can not be used as positive evidence of prior invention. Recollections of the declarant are evidence of prior invention and should be considered along with the Exhibits as facts showing that Applicants conceived of the subject matter of the invention prior to the priority date of *Lin*.

The Examiner also claims that in order to establish the drawings shown in the Exhibits are evidence of conception of the claimed invention; the declaration must establish a nexus or a direct link between the exhibits and the claims. Applicants respectfully point out that there is no nexus requirement in the MPEP, C.F.R. or case law in regard to swearing behind a cited reference. There is, however, a nexus requirement for showing secondary considerations of nonobviousness. There is no corresponding requirement for swearing behind a reference. Assuming, for the sake of argument, that there is a nexus requirement, there is a direct link between the declaration and the claims. In points 7-9 of Mr. Kledzik's Declaration, a direct link is established between the claims and the Exhibits by showing a number of elements of the claims, such as, for example, a carrier with a ball grid array and connection pads, a recess, an IC package and an interconnection pad array. In fact, much of the language used by Mr. Kledzik mirrors the language used in the claims. A simple reading of the Declaration along with the claims provides a direct link between the exhibits and the claims.

Applicants respectfully point out that according to *Ovshinsky* (as quoted in MPEP 715.07), the Exhibits need not support all the limitations of the claimed invention as long as any missing limitations are supported by declaration. While Exhibits A & B do not point out every limitation of the claims, at least point 6 of Mr. Kledzik's Declaration shows not only the missing limitations, but each and every limitation of claim 35. Thus, the Declaration of Mr. Kledzik with

Application No. 10/648,029

Atty. Docket No. 009.2005

support of the Exhibits and Mr. Chabot's Declaration show conception of the claimed invention prior to the priority date of *Lin*.

MPEP § 715.07 requires satisfactory evidence of facts showing priority of invention and that the declaration must clearly explain the facts to show completion of the invention. The Declaration of Mr. Kledzik specifically points out what is shown by Exhibit B and further describes Mr. Kledzik's recollection of the device represented in Exhibit B. Taken as a whole, the Exhibits and the Declarations show every element of claim 35 as required.

Mr. Kledzik further attests that he continued to work with Michael Chabot on a process to produce the invention at least until filing a U.S. patent application in October 2000. This Declaration is corroborated by the Declaration of Mr. Chabot. Mr. Chabot declares, under penalty of perjury, that he worked on implementing a process to produce the invention at least until Legacy Electronics, the assignee of the instant and related applications, began working on the patent application that was filed on 16 October 2000. The Chabot Declaration provides factual evidence supporting the Declaration of Mr. Kledzik that they did indeed work on a process to produce the invention at least until the parent patent application was filed. The Examiner is required to accept at face value the fact that Mr. Kledzik and Mr. Chabot continued to work on the application during this period as attested in their Declarations. *See Herman*, 39 USPQ 2d at 1777. Accordingly, due diligence is established by the work performed by and at the behest of the Applicants at Legacy Electronics from before 19 May 2000, until at least 16 October 2000.

Furthermore, actual reduction to practice is shown by the Exhibits, taking into account the knowledge of the Applicant. The Exhibits tied with the knowledge of the Applicant demonstrate that the invention would work for its intended purpose of stacking integrated circuits. Moreover, one skilled in the art with knowledge in possession of the attached Exhibits would understand how to practice the device; they would also fully appreciate that the device would work for the intended purpose of stacking integrated circuits. Accordingly, the Declarations and Exhibits show not only constructive reduction to practice, but also actual reduction to practice.

Application No. 10/648,029

Atty. Docket No. 009.2005

Bhakta & Lin do not Teach or Suggest each and every Feature of Claims 35 & 57

For the sake of argument, even if *Lin* is prior art, the Examiner has not shown how the combination of *Bhakta* and *Lin* teach or suggest each and every feature of at least claims 35 & 57. In the Advisory Action, the Examiner states that *Lin* is incorporated to establish the obviousness of BGA connection types because BGAs and BSBs provide the same function of connecting devices electrically. Providing the same function, however, does not establish obviousness. Rather, obviousness is shown when the prior art references 1) show some teaching or motivation to combine, 2) a reasonable expectation of success, and 3) they must teach or suggest each and every element of the claims. Here, using BGA connectors to connect a carrier with a circuit board is not taught by the prior art. Also, *Bhakta* teaches away from using the big solder balls (BSBs) of *Lin*. There is no teaching or motivation to combine the references.

Finally, BSBs are different from ball-grid arrays (BGAs).

Claim 35 comprises at least the following two features: 1) two IC chips connected to a carrier with connection elements; and 2) a carrier connected to a circuit board with BGA connections. *Bhakta* on the other hand teaches 1) a plurality of IC chips connected to an auxiliary circuit board with a pin-grid array and 2) an auxiliary circuit board connected to a main circuit board with surface mount connectors. The Examiner claims that it would be obvious to use a BGA when a pin-grid array is taught, as in *Bhakta*. This characterization is incorrect. Applicants use BGA connectors to connect a carrier with a circuit board; *Bhakta* uses a pin-grid array to connect components to an auxiliary board. The Examiner uses the connection type used to connect components to an auxiliary board to make an obvious argument for a connection type connecting a carrier with a circuit board. Accordingly, *Lin* and *Bhakta* do not teach or suggest each and every element of claim 25 and do render a carrier with BGAs obvious.

Bhakta teaches away from BGAs. The BGAs in claims 35 & 57 are “conductively bonded” to the circuit board; thus creating a mostly permanent connection between the two. The surface mount connections in *Bhakta*, on the other hand are described as “easily connected and disconnected.” Col. 7, line 58. Thus, *Bhakta* teaches auxiliary boards that can be connected and disconnected while the claims’ BGAs require a more permanent bond. The teaching in *Bhakta* teaches away from a mostly permanent connection as used in the claims.

Application No. 10/648,029

Atty. Docket No. 009.2005

Furthermore, the Examiner discusses *Bhakta* in regard to Fig. 8 only and disregards Fig. 7, which shows difference from claims 35 & 57. Fig. 8 should not be analyzed without reference to Fig. 7. *Bhakta* refers to FIG. 8 as "an exploded cross-sectional view of the expansion module illustrated in FIG. 7." The specification also discusses these figures at the same time: "Referring now to FIGS. 7 and 8" (col. 7, line 24) and "With further reference to FIGS. 7 and 8" (col. 8, line 50). Thus, to be complete, any discussion of Fig. 8 should include Fig. 7. Fig. 7 shows surface mount connectors 166a & 166b. The surface mount connectors in Fig. 7 & 8 require a physical connector on both the auxiliary board and the circuit board, as shown, whereas BGA connectors only require a BGA on the carrier and a pad on the board. Also, surface mount connectors are removable whereas BGA connections are conductively coupled. The surface mount connectors shown in Fig. 7 do not render BGA connectors obvious, because BGAs are distinct from surface mount connectors.

Furthermore, combining *Bhakta* with *Lin* would render *Bhakta* unsatisfactory for its intended purpose. See MPEP 2143.01. The purpose of the connectors in *Bhakta* is to provide removable memory stack. Combining *Bhakta* with *Lin* provides for carriers that are not removable. Accordingly, such a combination necessarily renders *Bhakta* unsatisfactory for its intended purpose. Therefore, there is no suggestion or motivation to combine these reference and obviousness is not shown.

Lin also does not teach a carrier with BGAs. Rather, *Lin* shows a carrier with big solder balls (BSBs). The BGAs in these claims are not BSBs, rather the BGAs in these claims are standard BGAs. The carriers described by these claims implement standard BGAs not BSBs. Assuming arguendo that BSBs include BGAs, *Lin* cannot be combined with *Bhakta* because *Bhakta* requires the connection be easily disconnected rather than conductively bonded. Bonded and easily connected and disconnected are mutually exclusive.

Furthermore BSBs comprise solder whereas BGAs are "a metal (e.g., gold) ball 2905 has been bonded or solder reflow[ed]." See paragraph [0017]. BGAs do not comprise solder. Rather, they are comprised of a metal such as gold, for example, that is bonded by solder. Furthermore, one skilled in the art would recognize that BGAs are not comprised of solder as a BSB is. Therefore, BSBs also teach away from BGAs.

Application No. 10/648,029

Atty. Docket No. 009.2005

Accordingly, Applicants respectfully request withdrawal of the rejection of claims 35 & 57 and the corresponding dependant claims 36-56 and 58-67.

The Recess in Claims 38, 41, 49, 52, 53, 58, 59 and 66

Claims 38, 41, 49, 52, 53, 58, 59 and 66 discuss a carrier comprising a recess. Claims 38, 49, 58 and 66 have been amended to include "a carrier body with a recess." Applicants amend these claims solely to expedite examination of these claims. Applicants do not acquiesce to the Examiners arguments that these claims are not patentable and reserve the right to pursue the subject matter of the claims later in prosecution. Claims 41, 52, 53 and 59 include a carrier comprising a planar face with a recess.

A carrier body with a recess and a major planar face with a recess are not taught or suggested by either *Bhakta* or *Lin*. The Examiner explains that reference 167 in Fig. 8 of *Bhakta* shows a recess. However, the specification notes that 167 shows a chip, not a recess, which is mounted in an opening. First, the opening in *Bhakta* is on the circuit board upon which the carrier is connected and not in the carrier as required by the claims. Second, an opening and a recess are not the same. A recess connotes, without defining the term, a hollow or enclosed space, whereas an opening is not hollow or enclosed, but rather open on both ends. An opening is open at the top exposing the top of a chip whereas a recess provides cover over chip. The opening in *Bhakta* does not have a portion of the carrier body covering the recess. Thus, *Bhakta* does not teach or suggest a recess in a carrier body.

In the Advisory Action, the Examiner states, "[t]he element in *Bhakta* is considered to be the recess since it is capable of performing the same function." Functionality, however, is not a test for patentability. It is immaterial whether the opening in *Bhakta* and the recess in the present claims perform the same function. What is material is whether the opening in *Bhakta* and/or *Lin* teaches or suggests a recess.

Lin also does not teach a carrier body with a recess. In claims 38, 49, 58 and 66 a carrier body has a recess and in claims 41, 52, 53, and 59 a planar faces includes a recess. In *Lin*, on the other hand, the big solder balls (BSB) create a space beneath the carriers. In *Lin*, the carrier body or planar faces, therefore, do not comprise the recess. Neither, *Bhakta* nor *Lin* teach or suggest a carrier comprising a recess. Applicants respectfully request that the rejection of claims 38, 41, 49, 52, 53, 58, 59 and 66 should be withdrawn.

Application No. 10/648,029

Atty. Docket No. 009.2005

CONCLUSION

Claims 35-67 are pending and believed allowable. Applicants respectfully request reconsideration of the present application in regard to the above arguments.

If the Examiner has any questions or believes further discussion will aid examination and advance prosecution of the application, a telephone call to the undersigned is invited.

Respectfully submitted,

16 August 2006

Mary S. Webster Reg. No. 37,156
for Jeff E. Schwartz
Reg. No. 39,019

Schwartz Sung & Webster
300 Massachusetts Avenue, NW, Suite 1101
Washington DC 20001
Telephone: 202.289.6291
Facsimile: 866.435.1389